

EXPLANATION OF THE PLATES.

PLATE II.

- Fig. 1. *Psechrus torvus* inverted below web, which here crosses a dry mountain torrent. $\times \frac{1}{10}$.
 Fig. 2. *Psechrus torvus* web edge on, to show the tubular retreat denied by Simon, also its slightly arched nature.

PLATE III.

- Fig. 3. *Argiope anasuja*; young resting on lacework stabilimentum. $\times 1$.
 Fig. 4. *Argiope anasuja*; web with full \times stabilimentum on *Opuntia*. $\times \frac{1}{4}$.

PLATE IV.

- Fig. 5. *Argiope anasuja*; stabilimentum with only one stroke of \times , spider rolling up a fly. $\times \frac{1}{2}$.
 Fig. 6. *Cyrtophora cicatrosa* within domed web. $\times \frac{1}{2}$.

PLATE V.

- Fig. 7. *Cyclosa* sp.? (Ceylon) with stabilimentum as diameter (broken) bearing spider and cocoons. Web against aloe-leaf.
 Fig. 8. *Araneus nauticus* resting by day on bark of a cypress-tree. $\times \frac{1}{2}$.

PLATE VI.

- Fig. 9. *Ædignatha retusa*; turret at mouth of burrow. $\times 1$.
 Fig. 10. Nilgiri Barychelid; turret at mouth of burrow. $\times \frac{1}{3}$.
 Fig. 11. *Agelena inda*; web on aloe-bush, showing cocoon-case within.

[All the Plates are from photographs taken by the Author.]

XXV.—*Brief Descriptions of new Thysanoptera*.—X.*

By RICHARD S. BAGNALL, F.L.S.

Suborder TEREBRANTIA.

Family Æolothripidæ.

Æolothrips fulvicollis, sp. n.

♀.—This species very closely resembles the common holarctic species *A. fasciatus*, L. The following differences are evident in the material at my disposal:—

The pronotum, instead of being of the same colour as the head and body, is much lighter, being of a yellow to yellowish-brown colour. The fore-legs are only present in

* Continued from Ann. & Mag. Nat. Hist. ser. 9, vol. i. p. 221 (1918).

one example, and are much lighter than the intermediate and hind pairs of legs. The dark and light areas of the fore-wings are roughly subequal in extent.

The head is as long as the prothorax and has the cheeks more strongly arched. In *A. fasciatus* the third antennal joint is longer than the fourth, in this species it is the same length (excluding pedicel) or slightly shorter (16 : 16 in one specimen and 15 : 17 in two).

The small setæ on the longitudinal vein of the fore-wings are fewer, very minute, being 0·5 to 0·3 the length of the corresponding setæ in *A. fasciatus*, lighter-coloured, and therefore more inconspicuous.

Type. In Coll. Bagnall, University Museum, Oxford.

Hab. INDIA, Cawnpur; 3 ♀ ♀ in flowers of *Verbascum* sp., 20. 3. 11 (*A. D. Imms*). Reg. 197.

Family Ceratothripidæ.

Ceratothrips gowdeyi, sp. n.

♀.—Length c. 1·0 mm.; form somewhat slender.

Colour brown, antennæ entirely concolorous with head; legs yellowish-brown to brown; wings brown, apparently somewhat lighter basally.

Head transverse, 0·7 as long as broad; cheeks subparallel; eyes large, occupying about 0·4 the total dorsal length of head; eyes moderately coarsely faceted and sparingly pilose; ocelli large, set well back, with crescentic hypodermal pigmentation; interocellar and postocular setæ minute; dorsal surface transversely striate. Antennæ 6-jointed, a little less than twice as long as the head; third joint (without trichome) very much shorter and narrower than any of the other joints (excluding style), pedicellate; relative lengths of joints approximately 8 : 13 : 7 (excluding pedicel) : 16 : 23 : 3. Stout forked trichome on 4. Mouth-cone reaching across prosternum; maxillary palpi rather long, 3-jointed, the third joint longest*; labial palpi long, slender.

Pronotum slightly longer than the head, about 1·6 times as broad as long; posterior margin depressed; bristles at each posterior angle stout, about 0·4 (or slightly less) the

* Although I have not demonstrated it to my entire satisfaction, I think that the maxillary palp of *Ceratothrips britteni*, Bagn., is also 3-jointed; I described it as "apparently 2-jointed," but the unique preparation is very obscure.

median length of the pronotum; surface weakly and irregularly transverse-striate, and sparsely setose; a postero-marginal pair, one on each side of the mid-line, a little longer and stouter than the other minor setæ. Pterothorax sub-quadrated. Spines at apex of hind tibiæ within stout. Wings reaching to about the seventh abdominal segment, fore-wings about thirteen times as long as broad near middle; fore-vein with three spines near juncture with lower vein, and 1+1+1 in the distal third; costa and lower vein with a series of 23 and 13 or 14 spines respectively.

Abdomen oblong-ovate; apical bristles moderately long and slender; posterior margin of tergite 8 with a very jagged, sparse, and irregularly set fringe of short microscopical setæ.

Type. British Museum of Natural History (Imperial Bureau of Entomology).

Hab. AFRICA, Uganda, Kampala; 1 ♀ in flowers of tree-tomato (*Solanum* sp.), Nov. 11th, 1917. I. B. E. no. 127 (C. C. Gowdy).

Family Thripidæ, s. l.

Genus DINUROTHRIPS, Hood.

Table of Species.

1. Size c. 1.5 mm. Species brachypterous. Legs brown, tibiæ at most shaded to a yellowish-brown distally; basal antennal joint yellowish, second dark grey-brown. *Hab.* South Africa *D. vezenyii*, sp. n.
Size 1.15 or 1.7 mm. Species winged 2.
2. Size 1.7 mm. Femora brown, tibiæ yellow; basal antennal joints as in *D. vezenyii*, Bagn. Fore-wings (excepting basal fifth) wholly brown. Eyes more prominent and cheeks more swollen. *Hab.* Porto Rico, *D. hookeri*, Hood.
Size 1.15 mm. Legs mostly yellow; basal antennal joint yellow. Fore-wings coloured otherwise, with the veins in the third sixth (or more) and the fifth sixth dark brown. Eyes smaller, less prominent, and cheeks very slightly arched. *Hab.* Australia *D. frontalis* (Bagn.).

Dinurothrips frontalis (Bagn.).

My *Heliothrips frontalis* from Australia is referable to the genus *Dinurothrips*, Hood. The head and the wings are typical of that genus, but the end of the abdomen is nearer the true *Heliothrips* form, and it is evident that *Dinurothrips*

should be placed near *Heliothrips*, and not with *Panchaethrips*, Bagn. The explanate lateral margins of the prothorax are narrow and take up the whole of the length. The terminal abdominal setæ are probably broken off. The reticulation of the pronotum is of a different nature to that described in *Heliothrips* and the other species of this genus; it takes the form of sunken, roundish, or elliptical areas more or less distant from each other.

Dinurothrips vezenyii, sp. n.

♀.—Length c. 1.5 mm.

Brachypterous; wings reduced to a pointed pad with wing-scale intact, about four times as long as broad, yellow-brown, with light patch near middle and marked dark grey-brown distally; one long seta at apex of scale.

Colour reddish-brown, deeply shaded with dark grey-brown, especially in the abdomen (where dark median and lateral patches in segments 2 to 6 are noticeable) and across the pronotum; fore-part of head and the pronotum anteriorly and posteriorly more or less yellow. Antennæ broken in the unique specimen, joint 1 yellow, 2 dark grey-brown. Tarsi and tibiae distally more or less yellowish.

Head much as in *D. hookeri*, but with the constriction behind eyes less marked and the cheeks less swollen; the deep channel separating the raised vertex and the eyes more evenly reticulated than in *hookeri*.

Pronotum much as in *D. hookeri*, the disc (excluding lateral explanation) widest at middle; the explanate lateral margins occupying the length of the pronotum, but chiefly noticeable in the distal half. Dorsal reticulation of abdomen evidently stronger than in *hookeri*, evanescent median posteriorly. Last abdominal segment stouter and less produced than in *hookeri*, less than the length of the head; bristles strong and moderately long, much as in *hookeri*.

Hab. SOUTH AMERICA, Tucuman (Argentine), November 1905; 1 ♀ (*Vezenyi*).

Genus TRYPHACTOTHRIPS, Bagn.*

Table of Species.

1. Head and prothorax strongly transverse, spines of the fore-wing longer than the

* This genus is erected for *Dinurothrips rutherfordi*, Bagn., in a memoir on the Thysanoptera of the Seychelles now in press, wherein *D. brevisetis* is described and *D. rutherfordi* figured.

- breadth of the wing, unicolorous. *Hab.*
 Gold Coast *T. roboris*, sp. n.
- Head and prothorax not so strongly transverse..... 2.
2. Spines of the fore-wing bicolorous, 1·3 times as long as the breadth of the wing. *Hab.*
 Ceylon *T. rutherfordi* (Bagn.).
- Spines of the fore-wing unicolorous, only 0·7 as long as the breadth of the wing.
Hab. Seychelles *T. brevisetis*, Bagn.

Tryphactothrips roboris, sp. n.

♀.—Length c. 1·2 mm.

Brown, sides of prothorax and the greater part of the first eight abdominal segments, chiefly laterally, of a very deep black-brown; hind and intermediate femora and the fore-tibiæ greyish-yellow shaded with brown; tibiæ yellowish shaded with grey to greyish-brown. Antennal joints 3–8 lost in the type, basal joints yellowish. Fore-wings yellowish-brown, darker on the veins, but with light or clear area in the basal fifth, about the fourth fifth, and at extreme tip.

Head strongly transverse, fully twice as long as broad, very markedly constricted at neck; genal and frontal explanate margins much narrower than in *T. rutherfordi*; ocelli on a raised prominence, large and well separated from the eyes, the front one forwardly directed. The reticulated surface with a crescentic series of eleven large reticulations behind, in the arc of which the reticulations are smaller and more regular than laterally and between the eyes above the arc. Pronotum twice as broad as long medianly (where it is the longest on account of both anterior and posterior margins being arcuate), and nearly three times as broad as the length at sides. Surface furnished with some setæ, of which a mid-lateral and postero-median pair are fairly prominent, being about 0·23 the median length of pronotum; they are acuminate, slightly curved, and apparently stouter in the basal third than at base. Prothorax, legs, wings, and abdomen much as in *T. rutherfordi*. Fore-wings broad in the basal third or thereabouts, thence narrow and parallel to near tip; upper vein with two spines near union with lower vein, the second being lighter and not so strong; a space and then a series of five (2+2+1); the first two being in the light area are less strong and lighter than the next two, which are situated on the dark patch before apex, whilst the most distal one is much weaker and nearly colourless; lower vein with 2 near base, then 1+4, the single one coming well before the series of five in the upper vein, and the first of the four

coinciding with the second in the said series of five; here, again, the last is weak and very light in colour, and, generally speaking, those on the lighter areas of the wing are less strong and lighter. Costal series few and irregular.

Type. British Museum of Natural History (Imperial Bureau of Entomology).

Hab. Gold Coast, Aburi; 1 ♀ in flower of *Thunbergia laurifolia*, Nov. 11th, 1915 (*W. H. Patterson*). Reg. no. 281, I. B. E. 115.

Heliothrips bicinctus, sp. n.

♀.—This species comes very near to *H. femoralis*, Reut., with which it may be mixed in collections. It is not so deep in coloration, and may be sharply separated by the coloration of the legs and wings as follows:—

Fore-wings brown excepting for a light area near base before distal fourth and at extreme tip, these areas being very short and ill-defined.
All tibiae, tarsi, and fore-femora yellow *H. femoralis*, Reut.

Fore-wings light-coloured, with two dark brown bands, the first (occupying about one-eighth the length of the wing) starting near the beginning of the second fourth and the other (occupying about one-seventh the length of the wing) just before tip. Hind-tibiae wholly yellow; fore-femora and the fore and more especially the intermediate tibiae more or less deeply shaded with grey to grey-brown *H. bicinctus*, sp. n.

The antennæ are incomplete in the four specimens now before me, and until I make further preparations I am not prepared to give a fuller description. The fore-wings are obviously more linear and slender than in *H. femoralis*, and the spines of the costa, fore-vein (from union with hind-vein), and hind-vein are respectively as follows:—20 to 21; 14 and 13 to 14.

In the African example the wing-spines appear to be stronger, whilst the intermediate tibia is very dark brown excepting basally and at apex.

Type. In Coll. Bagnall, University Museum, Oxford.

Hab. EUROPE, several examples from hothouses, Brussels and Newcastle-upon-Tyne; on various plants with *H. femoralis*, 1907 and 1908; 1 ♀ with *H. hæmorrhoidalis* on

banana-palm, Calatrava, Spain, submitted by Dr. W. E. Collinge.

AFRICA, Arusha; 1 ♀, Oct. and Nov. 1905 (*C. Katona*).

Heliothrips pattersoni, sp. n.

♀.—Length 1·3 mm.

Head and pterothorax brown, prothorax yellowish grey-brown; abdomen deep chestnut-brown, excepting the last three segments, which are yellow-brown shaded with grey; legs yellow, fore-femora and tibiæ and hind-femur lightly tinged with brown, intermediate femora and tibiæ more deeply shaded brown. Antenna yellowish, basal and apical joints more or less lightly tinged with grey-brown. Fore-wings light, with dark grey-brown bands approximating the third sixth and near tip; basally slightly clouded with smoky-yellow. Hind-wings with median vein brown, lighter in middle. Light-coloured examples with abdomen golden yellow-brown with brown lateral patches.

Head transverse, about 1·8 times as wide across cheeks (which are arched and wider than across eyes) as long; distinct collar basally. Surface deeply reticulated, with a distinct line at collar and another just behind eyes. Eyes large and coarsely faceted, vertex and space between eyes wide; ocelli normal, situated on sides and apex of a raised prominence. Antennæ about 2·8 times as long as head; segment 1 subquadrate, 2 broadest of all; 3 and 4 slender, urn-shaped, 3 being more than three times as long as broad; 5 broadly clavate; 6 broadly fusiform and broadly united to 7; 8 long and slender, forming a continuation of 7. Relative lengths of joints 3 to 8 as follows:—23 : 17 : 13 : 6 : 14. Maxillary palpi 2-segmented, apical joint long and slender.

Prothorax strongly transverse, more than 2·5 times as broad as long and about 0·75 the length of the head; sides subparallel, with well-defined angles. Surface not strongly reticulated, more or less regularly but sparsely set with longish and rather stout setæ, the longest, viz. the dorso-mid-lateral setæ, being about 0·35 the length of the pronotum.

Pterothorax a little longer than broad, stout; fore-wings with a series of about 20–22 costal spines, upper vein with 13–14 and lower vein with 9–11 irregularly set, those on the dark areas darker and stouter.

Larvæ whitish, with head, pronotum, the two basal antennal joints, basal joints of legs, and the last two abdominal segments grey-brown.

Type. British Museum of Natural History (Imperial Bureau of Entomology).

Hab. GOLD COAST, Aburi; ♀ ♀ and larvæ on *Gravilla* leaves, Nov. 11, 1915 (*W. H. Patterson*). Reg. no. 279, I. B. E. 113.

Heliothrips minutissimus, sp. n.

Length, ♀, c. 0.65 mm.; ♂, c. 0.5 mm.

Same form as *H. indicus*, Bagn., but much smaller, practically colourless—greyish-white to greyish-yellow,—though probably more deeply coloured in fresh examples; wings apparently of a light grey-brown. Unfortunately the examples at my disposal are too poorly preserved for a satisfactory description, but happily the special series of bristles on the ninth tergite of the male are clearly shown, demonstrating at once (apart from the great difference in size) that the species is not a colourless form of *indicus*. There are six long bristles arranged in the form of a crescent, the outside pair being the highest and practically mid-lateral, and the inmost pair the lowest, quite near the posterior margins.

Type. In Coll. Bagnall, University Museum, Oxford.

Hab. INDIA, Surat; BOMBAY, 2 ♀ ♀ and 1 ♂ with numerous examples of *H. indicus* on violet, Feb. 1906 (*H. Maxwell Lefroy*).

Dendrothrips jeanneli, sp. n.

♀.—Length c. 1.0 mm.

Head dark grey-brown, lighter on inner side of each eye; antennæ brown (basal joints lighter than joints 2 and 5-8), excepting joints 3 and 4, which are yellowish-white; pronotum mottled, central part grey-brown, each side irregularly marked from white or greyish-white to brown; pterothorax mostly brown; abdomen light, whitish to greyish-white, medianly grey-brown, darker on each side of the median sculpturing and at the extreme side of the patch, and a grey-brown spot placed laterally on tergites 3 and 7. Femora marked with brown, middle pair darker than the anterior pair; hind pair longer and lighter, femora greyish-white, speckled or touched with light grey-brown; ends of tarsi brown. Fore-wings grey-brown, lighter basally, with a short light patch near middle and before tip. Head very deeply excavated between eyes, surface reticulated. Au-

tennæ about 2·5 times the length of the head with the sixth joint (as in *ornatus*, Jabl., and *degeeri*, Uz.) divided, with the style long, longer than joint 6. Joints 5 and 6 broadly united.

Belonging to the section wherein the sixth antennal joint is divided and easily separated from both *ornatus* and *degeeri* by the long antennal style and the coloration of the antennæ, body, wings, &c.

Hab. E. AFRICA; 1 ♀ only, Lake Victoria Nyanza, Kisumu, a village situated at the lower end of the Bay of Kavirondo (alt. 1112 metres), Dec. 6. 1911, no. 23 (*Alluaud et Jeannel*).

Dendrothrips indicus, sp. n.

Length about 0·7 mm.

Colour brown, end of tibiæ and tarsi yellowish. Antennal joint 1 light yellowish to grey-brown, 2 brown, 3-5 yellow to greyish-yellow, 6 to 8 brown, 6 inclined to be lighter basally. Fore-wings with the second fourth grey-brown and a narrow grey-brown bar near tip.

Very near to *D. sexmaculatus*, Bagn. (Ceylon), but differing sharply in the colour of the abdomen and wings. Antennal joints 5 and 6 closely united and together longer than 3 and 4, style short, 6 not divided. Antennæ more than twice as long as the head.

♂.—Smaller. Abdominal sternites 2 to 7 with a small, slightly oviform, central, thinly chitinized area.

Type. In Coll. Bagnall, University Museum, Oxford.

Hab. INDIA, N. Malabar; on leaves of arrowroot, Sept. 1918 (*Ramakrishna*), Reg. no. 337.

Scolothrips 6-maculatus (Pergande).

I have had the opportunity of examining Schille's type of *Chatothrips uzeli*, which is larger than the 0·57 mm. given in his description. It belongs to the genus *Scolothrips*, as already stated, and if not identical with *S. 6-maculatus*, it comes very near to it. The second antennal joint is greyish, and not concolorous with the first, whilst the dark bands across the fore-wings are larger. Comparison with American examples of *S. 6-maculatus* is desirable before reaching a decision as to the specific identity.

I also possess three poor examples of a smaller *Scolothrips* which agree well with *S. 6-maculatus*; the markings on the wings agree with Hind's description, but the macrochætæ of the pronotum appear to be longer. These examples were taken in Russia, and it was noted that they were feeding on red mites (a peculiar feature observed in the American species), but I have unfortunately mislaid my Russian correspondent's letter, and am unable at present to give fuller data.

Odontothrips ulicis (Hal.).

Upon examining some examples of *O. ulicis* from Bohemia, ex Uzel's collection, I was struck by several differences readily discernible upon comparison with British examples of *ulicis* from *Ulex* spp. There is no means of knowing the flowers from which Uzel's examples were taken, and until further continental material has been studied there can be no certainty that the true *O. ulicis* exists outside the British Isles or upon other plants than *Ulex* spp. It differs from Uzel's species in its larger size, the longer hind tibiæ, which has a larger series of longer and stronger spines on the inner margin; the whole of the antennæ is of a very dark brown colour except joint 3, which is of a dirty greyish-yellow, whilst the sixth joint is comparatively longer. The two basal antennal joints in the ♂ are grey-brown. I hope to describe the species minutely when monographing the British species of the order.

Odontothrips uzeli, sp. n.

(for *Odontothrips ulicis* (Uzel), nec Haliday).

See remarks under above species, *O. ulicis*. The antennæ, apart from colour, are manifestly shorter and stouter; the following are the comparative lengths of joints 3 to 8, those for *O. uzeli* being more or less approximate:—

O. uzeli, Bagn. 43 : 38 : 26 : 36 : 5 : 10.

O. ulicis (Hal.) 51 : 48 : 34 : 47 : 8 : 13.

The intercellular bristles are shorter than in *ulicis*, measuring 10 as to 16 in the last-named species.

Separated from *O. ulicis* on material from Bohemia, ex Coll. Uzel, after whom I have pleasure in naming the species.

Odontothrips ignobilis, sp. n.

Of about the same size as *uzeli*, Bagn., and the antennæ of similar proportions, the approximate lengths of joints 3 to 8

being as follows:—42 : 37 : 26 : 37 : 6 : 11. Colour of antennæ entirely brown except for joint 3, which is of a clear light yellow. Fore-wings (excepting for a small area on the lower margin) without the clear basal space seen in both *ulicis* and *uzeli*. Fore-tibia with one "tooth" reduced to a very small sharp tooth and the other replaced by a dark stout seta.

Readily recognized by the armature of the fore-tibiæ, the obfuscate base of fore-wings, and the colour of the antennæ, &c.

Type. In Coll. Bagnall, University Museum, Oxford.

Hab. SPAIN, Ortigosa (Logrosa), 1892; ♀ ♀ only (Coll. Navas).

Genus FRANKLINIELLA, Karny.

a. *Small yellow species*.

Frankliniella delicatula, sp. n.

♀.—Length c. 1.0 mm.

This species resembles *F. pallida* (Uzel) somewhat closely, and may be separated by the more slender antennæ, which has a much longer style, the apical joint being much longer than the basal. The pronotal macrochætæ are shorter than in *pallida*. The fore-wings are colourless and have noticeably fewer spines, whilst the series of spines on the inner margin of hind tibia are also fewer in number.

The species will be more closely described in a paper I hope to prepare shortly on Messrs. Alluaud and Jeannel's material from East Africa.

Hab. EAST AFRICA, 1 ♀, 1. i. 1912; Kikuyu Country, Blue Post Hotel, situated at the confluence of the rivers Thika and Tchania, about 50 kilometres from Nairobi, alt. 1520 metres (*Alluaud et Jeannel*, no. 29).

? *Frankliniella cephalica*, Crawf.

The species I recorded from Trinidad as *F. melanommata*, Williams, is not truly referable to that species. I believe that it is referable to *cephalica*, but unfortunately the anal segments of the male of neither species is described satisfactorily, no mention being made of the specialized dorsal spines of the ninth tergite.

In the type-specimen ♂ of *melanommata* the chief bristles at hind angles of abdominal segments 9 and 10 are long and moderately stout, whilst there is a pair of short rather slender setæ on the ninth tergite placed close to the posterior margin, one on each side of the mid-line, the distance separating them being about 0·6 the length of the seta, and a long bristle situated between the postero-median pair and the posterior angles.

In my Trinidad examples now doubtfully referred to *cephalica* there is a single available ♂, the bristles at posterior angles of the abdominal segments 9 and 10 are very much stouter; there is a pair of postero-median setæ much as in *melanommata*, but stouter and more spine-like, whilst there is a more widely separated pair of weaker and shorter setæ situated on a higher plane, the arrangement being roughly an obverse arc.

Frankliniella distinguenda, sp. n.

♀.—Length c. 1·0 mm.

Very like *F. melanommata*, but paler, very slightly smaller, more slender, with distinctly shorter and stouter antennæ. Head transverse, about 1·4 times as broad as long. Cheeks weakly arched, subparallel; interocellar and postocular spines present, very short and weak. Antennæ a little more than twice as long as the head, pale, first joint almost white, 3 to 5 faintly tinged with greyish-brown distally, 6 to 8 of a uniform light grey-brown. Relative length of antennal segments 3 to 8 approximately as follows:—54 (with pedicel) : 48 : 39 : 52 : 8 : 12.

Pronotum longer than the head, the two pairs of bristles at posterior angles and the antero-angular pair long; the inner of the postero-angular pairs distinctly longer than the outer, about 0·55 as long as the pronotum; the outer postero-angular and the antero-angular pair subequal, 0·4 the length of the pronotum. The postero-marginal median pair smaller still, widely spaced, containing a pair of minor setæ between them and three minor setæ on each side. Number of spines on the costa, fore-vein, and hind-vein of fore-wing approximately as follows:—23, 3+16, and 16 respectively. Segments 9 and 10 of abdomen rather long, terminal bristles moderately long, slender.

♂.—Much as in the ♀, smaller and more slender. Macrochætæ of the terminal abdominal segments long, stout. Tergite 9 as described for *F. melanommata*; with a minor

seta between the outer long pair of postero-marginal setæ and the postero-angular macrochætæ.

Hab. SOUTH AMERICA, Puerto Max (Paraguay), 1905; 5 ♀ ♀ and 1 ♂ with *F. gemina* and *F. oxyura*, spp. n. (*Vezenyi*).

Frankliniella gemina, sp. n.

♀.—This species is so like *F. distinguenda* that a separate description is unnecessary. It is chiefly recognized by the well-developed cephalic and the longer antero- and postero-marginal pronotal setæ. The antennæ are comparatively a little longer and apparently a shade more slender; the relative lengths of joints 3-8 are approximately:—58:54:42:56:9 and 13.

The comparative lengths of the cephalic and pronotal macrochætæ are as follows:—

	<i>F. gemina.</i>	<i>F. distinguenda.</i>
HEAD:		
Interocellar	18	8
Postocular	13	7
PRONOTUM:		
Antero-angular	24	19
Antero-marginal	20	11
Postero-angular, outer	20	19
" " inner	27	26
Postero-marginal, median	15	11

♂.—With the distinguishing cephalic and pronotal chætotaxy as in the ♀. Terminal segments with the macrochætæ longer than in *distinguenda*, but the inner pair of specialized setæ of the ninth tergite shorter and less slender; otherwise as in *distinguenda*. I can find no trace of a minor seta between the long outer pair of tergal setæ and the postero-angular macrochætæ.

Hab. SOUTH AMERICA, Puerto Max (Paraguay), 1905; 3 ♀ ♀ and 1 ♂ with *F. distinguenda* and *F. oxyura*, spp. n. (*Vezenyi*).

b. *Larger dark brown species, antennal joints 3 to 5 and base of 6 light yellow.*

Frankliniella fulvipes, sp. n.

♀.—Length about 1.3 mm.

Colour chestnut-brown; first two antennal joints light

brown, 3 to 5 and basal third of 6 very pale creamy yellow, almost white, and 6 distally and style light grey-brown; fore-wings dark brown, basal fourth or thereabouts much lighter; fore-femora yellowish-brown, all tibiæ and tarsi pale yellow, sometimes lightly touched with pale grey-brown.

Head as in *F. insularis*, narrowed posteriorly and about 1.3 as wide across eyes as long; postocular and interocellar bristles well-developed, approximately 0.7 and nearly 1.0 the length of the eye respectively, the postocular pair almost touching the hind margins of the eyes. Antennæ about 2.5 times as long as the head, general form much as in *F. insularis*, with apical setæ of intermediate joints very long and strong; relative lengths of joints 3 to 8 approximately as follows:—76 : 67 : 48 : 57 : 10 : 20.

Pronotum 1.3 times as long as the head, transverse; macrochætæ as in *insularis*, almost subequal in length, the inner antero-marginal pair being nearly 0.9 or more the length of pair at posterior angles, which latter are 0.6 the length of the pronotum. Legs normal, pair of stout dark spinelets at apex of fore and intermediate tibiæ within and the series on the inner edge of hind tibiæ numbering 8 or 9, the pair at apex being long, stout, and straight, approximately 0.8 the width of the tibiæ near apex. Wings normal, spines of costa, fore-vein, and hind-vein numbering about 26, 19, and 17 respectively.

Abdomen slightly broader than pterothorax; last two segments inclined to be darker than the rest of the body; segment 10 divided for the most of its length above; terminal bristles long, stout, dark.

This species comes nearest to *F. insularis* (Franklin), but is readily recognized by the coloration of the antennæ and the relative lengths of the joints, and the coloration of the tibiæ.

Hab. SOUTH AMERICA, Tucuman (Argentine); 4 ♀♀, November 1905 (*Vezenyi*), with *F. setipes*, sp. n.

Frankliniella setipes, sp. n.

♀.—Length about 1.5 mm.

Colour uniform dark chestnut-brown, fore-tibiæ inclined to be lighter; all tarsi pale yellow; first two antennal joints concolorous with head, joints 3 to 5 and basal half of 6 pale lemon-yellow, distal half of 6 and style pale grey-brown.

Head not noticeably convergent posteriorly, about 1.2

times as broad as long; postocular and interocellar bristles as in *F. fulvipes*, sp. n., 0·8 and 1·1 times the length of the eye respectively. Antennæ as in *F. fulvipes*, about 2·3 times the length of the head; relative lengths of joints approximately as follows:—65 : 54 : 44 : 53 : 10 : 18.

Pronotum slightly longer than the head, transverse; macrochaetae as in *F. fulvipes*, but not quite so long compared to the length of the pronotum. Minor setæ of both head and pronotum stronger and more conspicuous than in *F. fulvipes*.

Legs normal, spines at inner apical margin of tibia not so stout as in *fulvipes*; minor setæ numerous, longer and more conspicuous, giving the legs a distinctly setose appearance even under a low-power objective.

Wings coloured as in *F. fulvipes*; curled in the available material, and therefore a count of the wing-spines is impossible.

This species is separated from *F. fulvipes* by the longer head, which is not convergent posteriorly, the shorter antennæ, and the colour of the tibiæ. It is a larger, darker, and coarser insect, and distinctly more spinose. Both *setipes* and *fulvipes* here described may be separated from all other described forms by the distinctive coloration of the antennæ.

Hab. SOUTH AMERICA, Tucuman (Argentine); 3 ♀♀, with *F. fulvipes*, sp. n., Nov. 1905 (*Vezenyi*).

c. *Dark species, colour of antennæ otherwise.*

Frankliniella oxyura, sp. n.

♀.—Length c. 1·05 mm.

Colour brown, abdomen generally darker than head and pronotum; pterothorax furnished with a good deal of red hypodermal pigmentation; femora brown, the fore-pair yellowish distally; all tibiæ and tarsi yellow, the hind pair lightly tinged with faint grey-brown in some specimens. Antennæ brown, joint 2 slightly darker than 1, 3 pale greyish yellow, and 4 yellowish brown, lighter basally. Wings yellowish brown, lighter, but not conspicuously so, in the basal fourth. General colour yellowish-brown in light specimens.

Head approximately 1·3 times as broad as long, cheeks practically parallel. Interocellar setæ apparently obsolete, postocular pair minute and inconspicuous. Antennæ about 2·2 times the length of the head, rather stout, segments 2, 3,

and 4 plainly broader than 6. Relative lengths of joints 3 to 8 approximately as follows:—42 (including pedicel) : 39 : 27 : 41 : 7 : 9.

Pronotum a little longer than the head, transverse; seta at each anterior angle about 0·3, and the outer pair at each posterior angle 0·4 the length of the pronotum; the inner postero-angular pair slightly longer than the outer. The antero-marginal and the postero-marginal median pair shorter, about 0·2 the length of the pronotum. Legs normal, series of spines of hind tibiæ within numbering 8 to 9; not particularly strong or conspicuous. Wings reaching to the seventh abdominal segment, fore-wings about thirteen times as long as broad near middle, veins strong, ribbed; bristles moderately long; costa, fore-vein, and hind-vein with about 23, 3+15 (13 to 17), and 14 (12 to 16) bristles respectively, apparently variable; cilia of lower margin wavy.

Abdomen elongate, a little broader than the pterothorax, with the last segments more than particularly long and sharply pointed. Last segment about 0·6 as broad at base as long, open for most of its length dorsally. Bristles on segments 9 and 10 moderately long, slender, the longest scarcely as long as the length of segment 10. Tergite 8 with a regularly set fringe of about twelve hair-like chitinous projections, long and fragile, with stout bases.

Recognized from the other small brown species of the genus—*tympanona*, *minuta*, and *fusca*—by the coloration of the antennæ and legs, and distinctive on account of the shape of the end of the abdomen.

Hab. SOUTH AMERICA, Puerto Max (Paraguay); 1905, ♀ ♀ only (*Vezenyi*).

Frankliniella insularis (Franklin).

Hab. SOUTH AMERICA, Los Trincheras (Venezuela); Dec. 1891, both sexes (*Meinert*).

Frankliniella varicorne, sp. n.

♀.—Length about 1·2 mm.

General colour yellowish-brown; head inclined to be lighter, shaded with grey, and abdomen of a deeper grey-brown. Thorax with light red hypodermal pigmentation. Wings very lightly washed with a suspicion of greyish-yellow, cilia light grey-brown. Antennæ with joints 2 and 6 to 8 dark brown, 1 very pale greyish-yellow, 3 and 5 dirty

yellow shaded lightly with grey-brown in the distal half or thereabouts; 4 also yellow but more deeply shaded with grey-brown in the distal two-thirds or thereabouts. Legs more or less yellowish, femora lightly touched with grey-brown.

Head transverse, about 1.5 times as broad as long, sides convergent posteriorly; interocellar and postocular bristles long and prominent, the former being decidedly the longer. Antennæ apparently more than 2.5 times as long as the head, only moderately stout, much as in *F. stylosa*, Hood, with the relative length of the joints 3 to 8 as follows:—55 (with pedicel) : 52 : 39 : 53 : 8 : 9.

Pronotum large, about 1.3 times as long as the head; bristles long and stout, the inner of the two bristles at each hind angle the longest of all, about 0.6 the length of the pronotum, the outer only about 0.7 the length of the inner. The bristles at each anterior angle also long, but the antero-marginal pair much shorter and the postero-marginal median pair shortest of all, about 0.3 the length of the pronotum. Legs normal, moderately long and stout. Fore-wing with 25, 3 (or 4) + 18, and 19 setæ on the costa, fore-vein, and hind-vein respectively.

Abdomen of normal form, comb on posterior margin of tergite 8 apparently present but indistinct in the single preparation; segment 10 open dorsally; bristles on 9 and 10 long, dark, and moderately strong.

♂.—Scarcely 0.9 mm. in length, very slender, yellow, suffused almost entirely with a light grey to grey-brown. Antennal coloration much as in ♀, but generally paler, with the shading of 4 and 5 more clearly defined. Sides of head scarcely convergent.

Relative lengths of antennal joints 3 to 8 approximately as follows:—46 (with pedicel) : 40 : 32 : 44 : 7 : 8. Costa, fore-vein, and hind-vein with 24, 3 + 15, and 15 setæ respectively. Macrochætæ of abdominal segments stout, dark; tergite 9 with a pair of postero-marginal median stoutish spines flanked by a long bristle on either side, broadly as in *F. melanommata*.

This species differs from both *F. schultzei* (Tryb.) and *F. stylosa*, Hood, in the subequal joints of the antennal style. It comes very close to the European *F. intonsa*, but is recognized by the longer prothorax, the inequality of the pronotal bristles, and the less strong terminal macrochætæ in the ♂.

Type. In Coll. Bagnall, University Museum, Oxford.

Hab. CANADA, Semans, Sask. ; 1 ♀ and 2 ♂♂ on *Petalostemon purpureum*, 4. viii. 1917 (*A. E. Cameron*, no. 27).

Genus EUTHRIPS, Targ-Tozz.

a. *Sixth antennal joint entire.*

Euthrips citricinctus, sp. n.

Length c. 1·0 mm.

Head, pronotum, abdominal segments 1, 2, and 6 to 10 deep blackish chestnut-brown; pterothorax brown, abdominal segments 3 to 5 and base of 6 lemon-yellow. Fore-wings tinted light greyish-yellow, basal fourth lighter and a darker ill-defined brown patch in the second fourth. Hind-wing with dark median vein extending into distal fourth. Anterior legs yellow; intermediate pair of femora yellow faintly shaded with grey-brown (the rest of the middle pair of legs are not present in the type-specimen); hind-femora yellow-brown; tibiæ yellow tinged with grey to grey-brown. Antennæ brown, with joints 3 and 4 light greyish-yellow, 3 being lighter than 4, extreme base of 5 yellowish.

Head 0·9 as long as broad, rounded between eyes; dorsal surface posteriorly transversely striate. Eyes moderately coarsely faceted; ocelli rather widely separated, with strong crescentic hypodermal pigmentation; mouth-cone long. Antennæ about 1·5 or 1·6 times as long as the head. Relative lengths of joints 4 to 8 as follows * :—10 : 10 : 14 : 3 : 4.

Pronotum quadrate, as long as the head, slightly broader basally, where it is 0·8 (or more) as broad as long.

Pterothorax about as long as broad, mesothorax broader than the metathorax. Wings reaching to the eighth abdominal segment, fore-wings broad, about fourteen times as long as broad across the middle; spines very minute, 8 or 9 on the upper and 8 on the lower vein; lower fringes of all wings wavy.

Abdomen elongate-ovate, distally obconical. Tergite 8 with a fringe on posterior margin; the lateral setæ each on a broad triangular base. Segment 10 open dorsally. Apical bristles fairly long, dark.

This species very closely approaches Karny's *E. flavicinctus* from Java. I am unable to identify it with his

* On account of the angle at which the basal part of each antenna is mounted, I cannot give a description of joints 1 to 3.

species, however, on account of the very different colouring of the legs, the shorter antennæ, and the form of the fore-part of the head.

Type. In Coll. Bagnall, University Museum, Oxford.

Hab. INDIA, N. Malabar, on arrowroot-leaves ; 1 ♀, Sept. 1918 (*Ramakrishna*). Reg. 337.

b. *Sixth antennal joint divided.*

Euthrips cameroni, sp. n.

♀.—Length 1.25 mm.

Belonging to the section of the genus containing *E. obscurus* (Müll.) and *E. secticornis* (Tryb.), both of which are known from North America.

Head yellowish, but largely shaded with dark grey-brown ; pronotum yellow more lightly shaded with grey-brown ; prothorax yellowish, but mostly shaded with brown. Abdomen uniform chestnut-brown, the segments 9 and 10 darker ; legs yellowish, lightly shaded with grey-brown. First antennal joint yellowish, shaded with grey-brown, second brown ; third yellow ; fourth light grey-brown, basally yellow ; 5 to 8 dark chestnut-brown, 5 with extreme base yellowish. Wings light greyish-yellow.

Head as long as broad ; eyes occupying about 0.45 the total length of head ; ocelli with deep crescentic crimson hypodermal pigmentation. Antennæ not quite twice as long as the head ; joint 3 longer and narrower than 1, 2, 4, or 5 and as long as 6 (with divided part) and much narrower ; fusiform and pedicellate. Joints 2 to 8 broadly as follows * :— 9 : 22 (with pedicel) : 18 : 15 : 22 (with divided part) : 4 : 5. Pronotum subquadrate, as long as the head and a little broader near base than long. Wings well-developed, spines of forewings minute, apparently few and sparse on upper vein, about 10 on lower vein.

Abdomen elongate-ovate, tapering somewhat apically ; tenth segment open dorsally, bristles long and strong. Fringe of posterior margin of tergite 8 moderately long and even.

♂.—A male example is mounted laterally. It is smaller than the ♀ and apparently lighter in colour. The special series of spines on tergite 8 very stout as in *Physothrips*

* Unfortunately mounted at an angle.

lefroyi, Bagn., and set on tubercles; the inmost pair longer, stouter, and on a higher plane, another pair more widely spaced and close to posterior margins (on account of the lateral view it is impossible to say where there are one or two pairs in this posterior series, but I am almost certain there is only one pair).

Type. In Coll. Bagnall, University Museum, Oxford.

Hab. CANADA, Semans, Sask., Aug. 4, 1917, 1 ♀ and 1 ♂ in injured wheat-stems (*A. E. Cameron*).

This species is easily separated from *E. obscurus*, Müll., and *E. badius*, Williams, by its coloration and from *E. secticornis* (Tryb.) by the 3rd antennal joint and the structure of the 5th and 6th joints in which *E. cameroni* agrees with *obscurus*. I have pleasure in naming the species after Dr. A. E. Cameron, of the Entomological Branch of the Canadian Dept. of Agriculture, who discovered it whilst investigating wheat-pests.

Genus LIMPHYSOTHRIPS, nov.

General appearance of *Physothrips* and, although the antennæ are broken in the unique preparation, it will almost certainly be found that the style is two-jointed.

Pronotum with two long bristles at posterior angles. Fore-tibiæ unarmed. Both veins of fore-wing regularly set with long bristles.

Tenth segment divided dorsally and armed with a very stout pair of dorsal spines at apex as in *Limothrips*.

Differs from all genera excepting *Limothrips* in the presence of the strong spines of the tenth abdominal segment. It further differs from *Physothrips* in the chætotaxy of the fore-wings and from *Odontothrips* in the unarmed fore-tibia. From *Limothrips* it differs in the general character of the wings, head, and prothorax, and in the absence of the additional stout spines present in the eighth abdominal segment of that genus.

• *Type*. *Limphysothrips paradoxus*, mihi.

Limphysothrips paradoxus, sp. n.

With the characters of the genus.

♀.—Length c. 1.3 mm.

Colour brown, wings with a yellowish tinge; fore-femora yellowish distally, fore-tibiæ and all tarsi yellowish; intermediate and hind tibiæ yellowish at extremities. Basal joints

light grey-brown shading to yellow-brown at apex of 2nd joint.

Head transverse, cheeks slightly widened and set with several short setæ behind eyes. Eyes coarsely faceted and minutely setose. Inter-ocellar bristles very long.

Pronotum transverse; bristles at hind angle long and stout. Wings long, reaching to apex of abdomen. Setæ of fore-wings long, those of costa very long, numbering 26; fore-vein 3+16 and lower vein 15.

Abdominal segment 10 cylindrical, open above with a pair of very stout horn-like dorsal spines at apex, and a pair of lateral apical bristles longer than the segment bearing them. Posterior bristles of 9 placed somewhat back, the lateral pairs long, longer than or as long as the segments 9 and 10 together, an inner dorsal pair about 0.15 the length of the longer ones. A short dorsal pair, widely spaced.

Hab. GERMAN EAST AFRICA, Alpine prairies around Bismarckhügel, altitude about 2700 metres, 1 ♀, April 1912 (*Alluaud et Jeannel*, no. 70).

Suborder TUBULIFERA.

Family Phlæothripidæ.

Genus *Haplothrips*.

a. *Fore-wings with duplicated cilia, slender, clouded.*

Haplothrips pictipes, sp. n.

♀.—Length 1.2 mm. to 1.3 mm., breadth of mesothorax c. 0.28 mm.

Colour dull chestnut-brown, tube darker basally; fore-femora yellowish distally; all tibiæ light yellow, more or less shaded with grey-brown except the base of intermediate pair and the basal two-fifths of the hind pair; the shaded part usually flecked with darker brown on the outer margin of the tibiæ. Antennæ brown, joint 3 yellow touched with light grey-brown in the distal half, 4 yellowish or greyish-yellow distally and basally. Wings clouded, clear basally, darkest before middle and lighter distally.

Head about as broad as long and 1.25 times as long as the pronotum; cheeks distinctly narrowed near base; eyes occupying about 0.38 the length of the head. Ocelli large, placed on a swelling with a strong hypodermal pigmentation; front one directed forwards, hind pair placed above a line drawn across the centre of the eyes; postocular bristles moderately

long, about 0·26 the length of the head, fundibuliform. Antennæ approximately twice as long as the head, segments 3 and 4 subequal, and 5 to 7 slightly shorter and also approximately subequal; relative lengths of 3 to 8 as follows:—36 : 35 : 30 : 30 : 30 : 21.

Pronotum transverse, nearly twice as broad as long; all setæ present, dilated apically and well-developed; those at posterior angles longest, about 0·4 the length of pronotum; the postero-marginal and mid-lateral pairs 0·35 and the antero-marginal pairs 0·3 the length respectively. Fore-femora stout; fore-tarsi each armed with a short tooth. Fore-wings normal, cilia sparse, few and widely spaced, duplicated cilia in three specimens 5 : 6, 5 : 6 and 5 : 7 respectively.

Abdomen not as broad as the pterothorax, tube 0·75 to 0·8 the length of the head, about 0·45 as broad at base as long, and half as broad at apex as at base. Apical hairs longer than tube, dark in the basal two-thirds but losing colour and very slender distally. Abdominal bristles light-coloured, the longest on segment 9 about 0·6 the length of tube, and colourless distally; those on 7 the same length, but stouter.

Type. In Coll. Bagnall, University Museum, Oxford.

Hab. INDIA, Taliparamta, Malabar, on diseased pepper-berries, September 1918 (*Ramakrishna*), Reg. no. 348.

b. *Fore-wings without duplicated cilia.*

Haplothrips unicolor, sp. n.

♀.—Length 1·5 to 1·6 mm., breadth of mesothorax c. 0·3 mm.

Colour of a uniform deep black-brown including tarsi, fore-tibiæ yellowish-brown distally; third antennal joint a little lighter in shade than the others. Wings, excepting scale which is brown, clear.

Head rather large, divergent posteriorly (though this may have been caused in mounting), and about 1·5 times as long as the pronotum; ocelli situated well forward on a produced prominence, the anterior ocelli overhanging and well in front of a line drawn across the anterior margins of the eyes. Antennæ about 1·5 times as long as the head; joint 4 broader than any of the others; relative length of segments 3 to 8 approximately as follows:—44 : 47 : 44 : 42 : 38 : 24, last two joints closely united, 4 to 7 each with a narrow basal constriction.

Pronotum transverse, setæ at each hind angle colourless, blunt, and about 0·6 the length of the pronotum; others apparently vestigial. Wings well-developed, constricted near middle, clear, and fore-wings without duplicated cilia. Cilia comparatively few and not close. Fore-tibiæ normal, fore-tarsus with a very small tooth.

Abdomen somewhat heavy, as broad as or very slightly broader than the pterothorax, narrowing gently posteriorly. Tube about 0·7 the length of the head; 0·6 as broad at apex as at base and more than twice as long as broad at base; chitinous "rod" long. Apical hairs weak, colourless distally, about 0·8 the length of the tube. Abdominal bristles moderately long, colourless.

♂.—More slender, Fore-legs rather long and not strongly incrassate and fore-tarsal tooth (tucked under the prothorax in the unique preparation) apparently small. Spines at posterior angles of abdominal segments minute except on 8 and 9.

Recognised by the colour, the clear wings, the absence of duplicated cilia in the fore-wings, and the apparent paucity of pronotal macrochætæ. *H. nigricornis* Bagn. (S. Africa), is a much larger and stouter insect, with closely ciliated wings.

Type. In Coll. Bagnall, University Museum, Oxford.

Hab. SOUTH AFRICA, Pirie, 4 ♀ ♀ and 1 ♂.

Podothrips varicornis, sp. n.

♂.—Slender; length about 1·1 mm.

Colour deep chestnut-brown; fore-tibiæ and fore-tarsi yellow. First two antennal joints concolorous with head, 3 light yellow with the distal third clouded with light grey-brown, 4 also yellow with the distal two-thirds light grey-brown; 5 and 6 light brown, basally light yellowish, 7 and 8 grey-brown. Wings clear basally and distally, but medianly clouded with a smoky-brown.

Head 1·2 to 1·3 times as long as broad, cheeks faintly arched and evidently slightly convergent posteriorly; ocelli well forward, with the anterior one overhanging. Postocular spines well back. Antennæ not quite twice as long as the head, segments 3 and 4 broadly clavate and much broader than the following; relative lengths of joints 3 to 8 approximately as follows:—39 : 40 : 37 : 35 : 36 : 24. Pronotum about 0·9 the length of the head, transverse; all setæ

apparently present, short, dark, slender but blunt at ends; of the two at each hind angle the outer is about 0.34 and the inner 0.26 the length of the pronotum, whilst the seta at each anterior angle is only about 0.2 the length. Wings slender, sub-linear, slightly constricted medianly; cilia comparatively sparse and distant; fore-wing with duplicated cilia. Legs comparatively stout, fore-legs incrassate, fore-tibiæ short, only about 0.5 the length of the femur; the end within produced into the form of a tooth; tarsus armed with a strong sharp tooth.

Tube stout, about 0.8 the length of the head, about 0.7 as broad at apex as at base and a little more than twice as long as broad at base. Terminal hairs weak, colourless terminally, and longer than the tube. Abdominal bristles somewhat long, slender; those on segment 9 as long as or slightly longer than the tube.

Type. In Coll. Bagnall, University Museum, Oxford.

Hab. SOUTH AFRICA, Cape Town, 1 ♂ in flower of Sugar Bush (*Protiacia*), July 13th, 1914 (*E. B. Poulton*).

Trichothrips melanurus, sp. n.

♀.—Forma aptera. Length c. 1.4 mm.

This species comes into the section of the genus containing yellowish to brown species, and having the tube shorter than the head and the mouth-cone reaching across the prosternum. It most closely approaches *T. semicœcus*, Uzel, from which it differs in the shorter tube, coloration of the body, and appendages.

Head and prothorax brown, pterothorax and abdominal segments 1 to 8 more or less irregularly brown. Abdominal segment 9 yellow and tube deep black; except for extreme base and apex where it is brown. All femora light brown, fore-femora yellow apically; all tibiæ and tarsi light lemon-yellow, more chitinous part of end tarsal joints black-brown. Antennal joint 1 light brown, 2 yellowish tinged with brown, 3 light lemon-yellow with distal half light yellow-brown, 4 dark brown in distal half, basal half light lemon-yellow, 5 and 6 distally dark brown with approximately the basal third and fourth light lemon-yellow; 7 and 8 wholly dark brown. The head is as long as broad, slightly longer than the pronotum, with the cheeks subparallel, only slightly narrowed at base and the front straight, so that the head is practically square with the two fore-corners cut off by the eyes. The eyes are small, the space between them wide and

dorsally occupying less than 0·2 the total length of the head. Postocular bristles long, colourless. Ocelli present, well forward. Antennæ twice as long as the head; relative lengths of joints 3 to 8 approximately as follows:—51 : 50 : 43 : 42 : 36 : 24. Joint 4 broader than 3 or 5; 3 claviform, 4 claviform; 5 subclavate, stemmed; 6 also stemmed, and 7 constricted at extreme base to a very short stem. Sense-cones stout, rather blunt.

Pronotum transverse, a little more than twice as broad as long. All setæ present, practically colourless and therefore inconspicuous; those at posterior angles the longest, the outer and inner being 0·55 and 0·45 the length of the pronotum respectively; mid-lateral pair short and the pair at anterior angles about 0·25 the length. Fore-femora slightly incrassate and fore-tarsus toothed. Pterothorax not as broad as the width across the fore-coxæ, about 0·75 as long as broad.

Abdomen slightly broader than the pterothorax; roundly narrowed apically, bristles moderately long, colourless, and inconspicuous. Tube about 0·75 the length of the head; 2·25 times as broad at base as at apex, sides straight and evenly narrowed. Apical hairs weak, short, about 0·5 the length of the tube.

Type. In Coll. Bagnall, University Museum, Oxford.

Hab. AUSTRALIA, F. T. Gulley, 27. 10. 13 (*F. Spry*).

This is the only data at my disposal.

XXVI.—*New Species and Forms in the Joicey Collection.*

By LOUIS B. PROUT.

Fam. Geometridæ.

Subfam. *ENOCHROMINÆ*.

1. *Cartaletis gracilis landbecki*, subsp. n.

Like *gracilis variegata*, Prout (Nov. Zool. xxiii. p. 274), in the extension of the fulvous markings, but distinguished by having these of the pale shade of *forbesi*, Druce, whereas in *g. variegata* they are of the warm reddish shade of *sapor*, Druce, or of *Paratyphodes tenuis*, Butl. The most constant